

PATENT ABSTRACTS OF JAPAN

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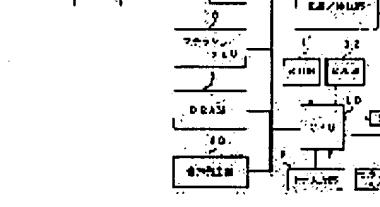
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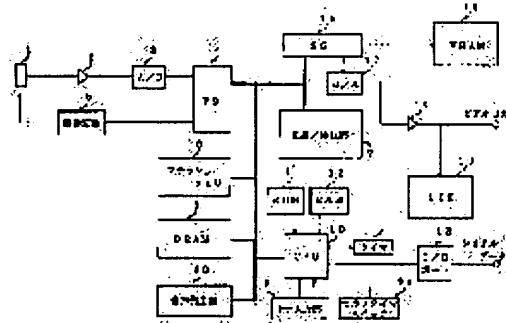
(54) ELECTRONIC CAMERA FOR STILL PICTURE

(57) Abstract:

PURPOSE: To provide a electronic camera for still picture by which the timing to click a shutter can be easily known even in the case the place to take a picture is very noisy or the place is rather far from a set site.

CONSTITUTION: At the time of using a self-timer, both a CCD 1 and a LCD 19 are set to face to a subject side to be photographed. Then, when the self-timer 9a is operated, the control of the CCD1 is turned off and actual time measurement with the lapse of time by a timer 14 is started. The numerical value to count down with the lapse of time of the self-timer is shown on the LCD 19 face to the subject side to be photographed. As a result, the subject to be photographed can know visually the remaining time until the time of clicking a shutter. At the time of time-up, the control of the CCD1 is turned to on-state, the image of the subject to be photographed is taken, and the data is stored in a DRAM 6. After that, the data is compressed by a compressing/ expanding part 7 and housed in a flash memory 8. When a reproducing instruction is given, the data is expanded by the compressing/expanding part 7 and then displayed on a LCD 19.





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JAPANESE

[JP,07-333710,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE
INVENTION TECHNICAL PROBLEM MEANS OPERATION EXAMPLE DESCRIPTION OF
DRAWINGS DRAWINGS CORRECTION OR AMENDMENT

[Translation done.]

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CLAIMS

[Claim(s)]

[Claim 1] A photography means to photo an image optically, and the display means established free movable so that the screen might be turned to a photographed person side at the time of self-timer actuation, the time check which clocks the elapsed time at the time of self-timer actuation -- at a means and the time of self-timer actuation a display for said display means of the image photoed by said photography means -- stopping -- said time check -- the electronic "still" camera characterized by providing the control means which displays on said display means the elapsed time clocked by the means as an image which can be checked by looking to a photographed person.

[Claim 2] The electronic "still" camera according to claim 1 characterized by having the switching means which directs said self-timer actuation.

[Claim 3] said image -- said time check -- the electronic "still" camera according to claim 1 characterized by being the figure counted down according to the elapsed time by the means.

[Claim 4] said image -- said time check -- the electronic "still" camera according to claim 1 characterized by being the annular band with which the periphery becomes short according to the elapsed time by the means.

[Claim 5] said image -- said time check -- the electronic "still" camera according to claim 1 characterized by the foreground color changing according to the elapsed time by the means.

[Claim 6] said image -- said time check -- the electronic "still" camera according to claim 1 characterized by blinking with the period according to the elapsed time by the means.

[Claim 7] said image -- said time check -- the electronic "still" camera according to claim 1 characterized by the magnitude changing according to the elapsed time by the means.

[Claim 8] said image -- said time check -- the electronic "still" camera according to claim 1 characterized by spreading gradually in the viewport of said display means according to the elapsed time by the means.

[Claim 9] said image -- adding -- said time check -- the electronic "still" camera according to claim 1 characterized by providing a voice generating means to pronounce the elapsed time by the means with voice.

[Claim 10] The electronic "still" camera according to claim 1 characterized by combining any two or more at least among the means of displaying indicated to claim 3 thru/or 9.

[Claim 11] An electronic "still" camera given in claim 1 thru/or any of 10 they are. [which is characterized by having a storage means by which said image was memorized]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the electronic "still" camera which records a static image on a record medium.

[0002]

[Description of the Prior Art] Conventionally, the optical static image caught with the lens is changed into an electrical signal by CCD (Charge Coupled Device; charge-coupled device), and the electronic "still" camera memorized to semiconductor memory and record media, such as a floppy disk, is known. In this electronic "still" camera, since the static image is recorded as electric information, it has the description that it can reproduce with a television set as it is, or various image processings can be performed [**** / transmitting to a remote place] using the telephone line.

[0003]

[Problem(s) to be Solved by the Invention] By the way, since he was trying to make a photographed person recognize the stage when a shutter is cut with the conventional electronic "still" camera when taking a photograph using a self-timer by shortening intervals, such as an audible tone, there were the following problems.

(b) There were a location where the noise is loud, and a problem that it was not known whether there is any residual time of a self-timer however when the photographed person is considerably separated from the installation of an electronic "still" camera.

(b) For this reason, there was a problem that the stage when a shutter is cut was unclear.

[0004] Then, even if this invention is the case of being considerably separated from the location where the noise is loud, and the installation, it aims at offering the electronic "still" camera which can check easily the stage when a shutter is cut.

[0005]

[Means for Solving the Problem] The electronic "still" camera by invention according to claim 1 for the above-mentioned purpose achievement A photography means to photo an image optically, and the display means established free movable so that the screen might be turned to a photographed person side at the time of self-timer actuation, the time check which clocks the elapsed time at the time of self-timer actuation -- at a means and the time of self-timer actuation a display for said display means of the image photoed by said photography means -- stopping -- said time check -- it is characterized by providing the control means which displays the elapsed time clocked by the means on said display means displayed on said display means as an image which can be checked by looking to a photographed person.

[0006] Moreover, it considers as a desirable mode, for example, you may make it have the switching means according to claim 2 which directs said self-timer actuation like. moreover, said image -- for example, -- being according to claim 3 -- like -- said time check -- you may be the figure counted down according to the elapsed time by the means. moreover, said image -- for example, -- being according to claim 4 -- like -- said time check -- you may be the annular band with which the periphery becomes short according to the elapsed time by the means.

[0007] moreover, said image -- for example, -- being according to claim 5 -- like -- said time check -- you may make it the foreground color change according to the elapsed time by the means moreover, said image -- for example, -- being according to claim 6 -- like -- said time check -- you may make it blink with the period according to the elapsed time by the means moreover, said image -- for example, -- being according to claim 7 -- like -- said time check -- you may make it the magnitude change according to the elapsed time by the means moreover, said image -- for example, -- being according to claim 8 -- like -- said time check -- you may make it spread gradually in the viewport of said display means according to the elapsed time by the means

[0008] moreover -- as a desirable mode -- for example, -- being according to claim 9 -- like -- said image -- adding -- said time check -- you may make it provide a voice generating means to pronounce the elapsed time by the means with voice Moreover, you may make it said image combine the means of displaying according to claim 10 indicated to claim 3 thru/or 9 like, for example. Moreover, it considers as a desirable mode, for example, you may make it have a storage means according to claim 11 by which said image was memorized like.

[0009]

[Function] this invention -- the time of self-timer actuation -- a time check -- the time check by the means -- starting -- this time -- a time check -- the elapsed time clocked by the means is displayed on a display means by which the screen was turned to the photographed person side, by the control means as an image which can be checked by looking to a photographed person. Therefore, even if it is the case of being considerably separated from the location where the noise is loud, and the installation, recognition becomes possible easily about the stage when a shutter is cut.

[0010]

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

A. Configuration A-1. block diagram drawing 1 of this example is the block diagram showing the configuration of the electronic "still" camera in one example of this invention. In drawing, 1 is CCD, changes into an electrical signal the quiescence image which carried out image formation through the lens which is not illustrated, and supplies it to a buffer 2. After a buffer 2 amplifies the above-mentioned quiescence video signal on predetermined level, it is supplied to the A/D-conversion section 3. After the A/D-conversion section 3 changes the above-mentioned quiescence video signal into digital data (henceforth a video signal), it is supplied to TG (Timing Generator; timing generator)4. According to this timing signal, TG4 incorporates the above-mentioned video signal, and outputs it to a data bus while it generates the timing signal for controlling the drive circuit 4 which drives CCD1 and supplies this to the drive circuit 5.

[0011] Next, 6 is DRAM (dynamic memory) and is a storage which stores temporarily the video signal which the above TG 4 outputs. This video signal is read when photography for one screen is completed, and color data processing which separates a luminance signal and a chrominance signal is performed. Moreover, while 7 compresses the above-mentioned luminance signal and chrominance signal which were separated by color data processing with compression methods, such as for example, a JPEG (Joint Photographic Coding Experts Group) method, it is compression/elongation section which performs processing which elongates the compressed compression video signal. 8 is a flash memory which stores the video signal (a luminance signal and chrominance signal) by which compression was carried out [above-mentioned]. 9 is the key input section and consists of a mode of operation (an image incorporation key, playback key) of the electronic "still" camera concerned, a switch which sets up the various set points. 9a is a self-timer switch for operating self-timer ability. The condition of the key input section 9 and self-timer switch 9a is incorporated by CPU (central processing unit)10.

[0012] CPU10 controls actuation of each part according to the condition of the program in ROM11, and the switch of the above-mentioned key input section 8. 12 is RAM (random access memory) and is used as working area of the above CPU 10. Moreover, 13 is an I/O Port which functions as an interface which outputs and inputs the video signal changed into the serial signal. 14 is a timer which clocks the real time with directions of CPU10. Next, 15 is SG (Signal Generator; video signal generator), it superimposes a chrominance signal on the luminance signal elongated by compression/elongation

section 7, adds a synchronizing signal etc., creates a digital video signal, and outputs it to VRAM (Video RAM)16 and D/A converter 17.

[0013] VRAM16 is a storage which memorizes the above-mentioned digital video signal. Moreover, D/A converter 17 is supplied to LCD (liquid crystal display)19 while it changes into an analog signal (henceforth an analog video signal) the digital video signal which the above SG15 outputs and outputs it from an outgoing end through a buffer 18. LCD19 displays an image according to the analog video signal supplied through a buffer 18.

[0014] A-2. Explain the appearance of an external view, next the electronic "still" camera of this example with reference to drawing 2 . Drawing 2 is the mimetic diagram showing the appearance of the electronic "still" camera at the time of self-timer use. In drawing, the electronic "still" camera consists of the photography section 21 in which the lens 20 was formed, and the monitor section 22 in which LCD19 mentioned above was formed, and the photography section 21 and the monitor section 22 are connected with the connecting shaft 23 which can rotate freely to a shaft center. In anticipated use, the photography section 21 or the monitor section 22 is rotated so that a lens 20 may turn to a photographed person side and LCD19 may turn to a photography person side. On the other hand, at the time of self-timer use, the photography section 21 or the monitor section 22 is rotated, and it considers as the condition of illustration so that the both sides of a lens 20 and LCD19 may turn to a photographed person side. If it is in the condition of illustration, the display of LCD19 can be seen from a photographed person side. If a thing with a size of several inches is used for LCD19, even if the photographed person is considerably separated, a display can be checked easily.

[0015] A-3. Explain the outline configuration at the time of self-timer actuation, next the functional configuration of the electronic "still" camera concerned at the time of self-timer use with reference to drawing 3 . Drawing 3 is the block diagram showing the abbreviation functional configuration of the electronic "still" camera concerned at the time of self-timer use. In addition, in drawing, the same sign is attached to the part corresponding to drawing 1 , and the explanation is omitted. In drawing 3 , 30 is the character generating section in which the image data for self-timers for making it display on LCD19 is stored so that it may tell a photographed person about the stage with which a shutter is cut at the time of self-timer actuation. In addition, about the example of the image data for self-timers, it mentions later.

[0016] The above-mentioned image data for self-timers expresses the elapsed time as an image according to the elapsed time of the self-timer which clocks time amount until a shutter is cut from initiation of operation at the time of self-timer actuation. The above-mentioned character generating section 30 consists of a storage which stores the image data for self-timers according to the elapsed time of a self-timer, and an output means to synchronize with self-timer **** elapsed time, and to output the above-mentioned image data for self-timers. Although the storage with which the image data for self-timers is stored is realized by ROM11 shown in drawing 1 and the above-mentioned output means is realized in this example by the processing (software) by CPU10, you may make it have the hardware of dedication.

[0017] Next, 31 is a means for switching for supplying either of the image data which TG4 mentioned above outputs, and the image data for self-timers which the above-mentioned character generating section 30 outputs to LCD19.

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TECHNICAL FIELD

[Industrial Application] This invention relates to the electronic "still" camera which records a static image on a record medium.

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PRIOR ART

[Description of the Prior Art] Conventionally, the optical static image caught with the lens is changed into an electrical signal by CCD (Charge Coupled Device; charge-coupled device), and the electronic "still" camera memorized to semiconductor memory and record media, such as a floppy disk, is known. In this electronic "still" camera, since the static image is recorded as electric information, it has the description that it can reproduce with a television set as it is, or various image processings can be performed [**** / transmitting to a remote place] using the telephone line.

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EFFECT OF THE INVENTION

[Effect of the Invention] according to this invention -- the time of self-timer actuation -- a time check -- the time check by the means -- starting -- this time -- a time check -- since it was made to display the elapsed time clocked by the means on a display means by which the screen was turned to the photographed person side, by the control means as an image which can be checked by looking to a photographed person, the following effectiveness is acquired.

- (1) Even if it is the case of being considerably separated from the location where the noise is loud, and the installation of an electronic "still" camera, the residual time of a self-timer can be checked easily.
- (2) For this reason, the stage when a shutter is cut can be recognized easily.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, since he was trying to make a photographed person recognize the stage when a shutter is cut with the conventional electronic "still" camera when taking a photograph using a self-timer by shortening intervals, such as an audible tone, there were the following problems.

(b) There were a location where the noise is loud, and a problem that it was not known whether there is any residual time of a self-timer however when the photographed person is considerably separated from the installation of an electronic "still" camera.

(b) For this reason, there was a problem that the stage when a shutter is cut was unclear.

[0004] Then, even if this invention is the case of being considerably separated from the location where the noise is loud, and the installation, it aims at offering the electronic "still" camera which can check easily the stage when a shutter is cut.

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MEANS

[Means for Solving the Problem] The electronic "still" camera by invention according to claim 1 for the above-mentioned purpose achievement A photography means to photo an image optically, and the display means established free movable so that the screen might be turned to a photographed person side at the time of self-timer actuation, the time check which clocks the elapsed time at the time of self-timer actuation -- at a means and the time of self-timer actuation a display for said display means of the image photoed by said photography means -- stopping -- said time check -- it is characterized by providing the control means which displays the elapsed time clocked by the means on said display means displayed on said display means as an image which can be checked by looking to a photographed person.

[0006] Moreover, it considers as a desirable mode, for example, you may make it have the switching means according to claim 2 which directs said self-timer actuation like. moreover, said image -- for example, -- being according to claim 3 -- like -- said time check -- you may be the figure counted down according to the elapsed time by the means. moreover, said image -- for example, -- being according to claim 4 -- like -- said time check -- you may be the annular band with which the periphery becomes short according to the elapsed time by the means.

[0007] moreover, said image -- for example, -- being according to claim 5 -- like -- said time check -- you may make it the foreground color change according to the elapsed time by the means moreover, said image -- for example, -- being according to claim 6 -- like -- said time check -- you may make it blink with the period according to the elapsed time by the means moreover, said image -- for example, -- being according to claim 7 -- like -- said time check -- you may make it the magnitude change according to the elapsed time by the means moreover, said image -- for example, -- being according to claim 8 -- like -- said time check -- you may make it spread gradually in the viewport of said display means according to the elapsed time by the means

[0008] moreover -- as a desirable mode -- for example, -- being according to claim 9 -- like -- said image -- adding -- said time check -- you may make it provide a voice generating means to pronounce the elapsed time by the means with voice Moreover, you may make it said image combine the means of displaying according to claim 10 indicated to claim 3 thru/or 9 like, for example. Moreover, it considers as a desirable mode, for example, you may make it have a storage means according to claim 11 by which said image was memorized like.

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OPERATION

[Function] this invention -- the time of self-timer actuation -- a time check -- the time check by the means -- starting -- this time -- a time check -- the elapsed time clocked by the means is displayed on a display means by which the screen was turned to the photographed person side, by the control means as an image which can be checked by looking to a photographed person. Therefore, even if it is the case of being considerably separated from the location where the noise is loud, and the installation, recognition becomes possible easily about the stage when a shutter is cut.

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EXAMPLE

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

A. Configuration A-1. block diagram drawing 1 of this example is the block diagram showing the configuration of the electronic "still" camera in one example of this invention. In drawing, 1 is CCD, changes into an electrical signal the quiescence image which carried out image formation through the lens which is not illustrated, and supplies it to a buffer 2. After a buffer 2 amplifies the above-mentioned quiescence video signal on predetermined level, it is supplied to the A/D-conversion section 3. After the A/D-conversion section 3 changes the above-mentioned quiescence video signal into digital data (henceforth a video signal), it is supplied to TG (Timing Generater; timing generator)4. According to this timing signal, TG4 incorporates the above-mentioned video signal, and outputs it to a data bus while it generates the timing signal for controlling the drive circuit 4 which drives CCD1 and supplies this to the drive circuit 5.

[0011] Next, 6 is DRAM (dynamic memory) and is a storage which stores temporarily the video signal which the above TG 4 outputs. This video signal is read when photography for one screen is completed, and color data processing which separates a luminance signal and a chrominance signal is performed. Moreover, while 7 compresses the above-mentioned luminance signal and chrominance signal which were separated by color data processing with compression methods, such as for example, a JPEG (Joint Photographic Coding Experts Group) method, it is compression/elongation section which performs processing which elongates the compressed compression video signal. 8 is a flash memory which stores the video signal (a luminance signal and chrominance signal) by which compression was carried out [above-mentioned]. 9 is the key input section and consists of a mode of operation (an image incorporation key, playback key) of the electronic "still" camera concerned, a switch which sets up the various set points. 9a is a self-timer switch for operating self-timer ability. The condition of the key input section 9 and self-timer switch 9a is incorporated by CPU (central processing unit)10.

[0012] CPU10 controls actuation of each part according to the condition of the program in ROM11, and the switch of the above-mentioned key input section 8. 12 is RAM (random access memory) and is used as working area of the above CPU 10. Moreover, 13 is an I/O Port which functions as an interface which outputs and inputs the video signal changed into the serial signal. 14 is a timer which clocks the real time with directions of CPU10. Next, 15 is SG (Signal Generater; video signal generator), it superimposes a chrominance signal on the luminance signal elongated by compression/elongation section 7, adds a synchronizing signal etc., creates a digital video signal, and outputs it to VRAM (Video RAM)16 and D/A converter 17.

[0013] VRAM16 is a storage which memorizes the above-mentioned digital video signal. Moreover, D/A converter 17 is supplied to LCD (liquid crystal display)19 while it changes into an analog signal (henceforth an analog video signal) the digital video signal which the above SG15 outputs and outputs it from an outgoing end through a buffer 18. LCD19 displays an image according to the analog video signal supplied through a buffer 18.

[0014] A-2. Explain the appearance of an external view, next the electronic "still" camera of this example with reference to drawing 2 . Drawing 2 is the mimetic diagram showing the appearance of the

electronic "still" camera at the time of self-timer use. In drawing, the electronic "still" camera consists of the photography section 21 in which the lens 20 was formed, and the monitor section 22 in which LCD19 mentioned above was formed, and the photography section 21 and the monitor section 22 are connected with the connecting shaft 23 which can rotate freely to a shaft center. In anticipated use, the photography section 21 or the monitor section 22 is rotated so that a lens 20 may turn to a photographed person side and LCD19 may turn to a photography person side. On the other hand, at the time of self-timer use, the photography section 21 or the monitor section 22 is rotated, and it considers as the condition of illustration so that the both sides of a lens 20 and LCD19 may turn to a photographed person side. If it is in the condition of illustration, the display of LCD19 can be seen from a photographed person side. If a thing with a size of several inches is used for LCD19, even if the photographed person is considerably separated, a display can be checked easily.

[0015] A-3. Explain the outline configuration at the time of self-timer actuation, next the functional configuration of the electronic "still" camera concerned at the time of self-timer use with reference to drawing 3. Drawing 3 is the block diagram showing the abbreviation functional configuration of the electronic "still" camera concerned at the time of self-timer use. In addition, in drawing, the same sign is attached to the part corresponding to drawing 1, and the explanation is omitted. In drawing 3, 30 is the character generating section in which the image data for self-timers for making it display on LCD19 is stored so that it may tell a photographed person about the stage with which a shutter is cut at the time of self-timer actuation. In addition, about the example of the image data for self-timers, it mentions later.

[0016] The above-mentioned image data for self-timers expresses the elapsed time as an image according to the elapsed time of the self-timer which clocks time amount until a shutter is cut from initiation of operation at the time of self-timer actuation. The above-mentioned character generating section 30 consists of a storage which stores the image data for self-timers according to the elapsed time of a self-timer, and an output means to synchronize with self-timer **** elapsed time, and to output the above-mentioned image data for self-timers. Although the storage with which the image data for self-timers is stored is realized by ROM11 shown in drawing 1 and the above-mentioned output means is realized in this example by the processing (software) by CPU10, you may make it have the hardware of dedication.

[0017] Next, 31 is a means for switching for supplying either of the image data which TG4 mentioned above outputs, and the image data for self-timers which the above-mentioned character generating section 30 outputs to LCD19. At the time of normal operation, if this means for switching 31 is put in another way, in addition to the time of self-timer actuation, it will supply the image data which TG4 outputs to LCD19, and will supply the image data for self-timers which the character generating section 30 outputs to LCD19 at the time of self-timer actuation. Although the means for switching 31 is realized by the processing (software) by CPU10, you may make it have the hardware of dedication in this example.

[0018] A-4. Explain the example of the 1st display of the image data for self-timers, next the image data for self-timers mentioned above with reference to drawing 4. Drawing 4 (a) and (b) are the mimetic diagrams showing an example of the image data for self-timers displayed on LCD19. The image data for self-timers shown in drawing 4 (a) and (b) is image data of the count-down format which reduces the one-count elapsed time by the self-timer at a time, and expresses counted value in a figure. in drawing, a figure is void and is displayed on the center section of LCD19 -- having -- coming -- **** -- a background (slash section) -- black -- poor -- it is that it is ****. Moreover, the mark of the figure upper part expresses use of a self-timer. A little image data for self-timers which can set the image data for self-timers shown in this drawing (a) in early stages of self-timer actuation, and is shown in this drawing (b) is the thing after passing. By taking such a display format, a photographed person can get to know residual time until a shutter is cut visually.

[0019] A-5. Explain the example of the 2nd display of the image data for self-timers, next the 2nd example of a display of the image data for self-timers mentioned above with reference to drawing 5. Drawing 5 (a) and (b) are the mimetic diagrams showing other examples of the image data for self-timers displayed on LCD19. The image data for self-timers shown in drawing 5 (a) and (b) is image data

which directs the elapsed time by the self-timer with the die length of an annular white band, and the die length of an annular white band becomes short according to elapsed time. The image data for self-timers which can set the image data for self-timers shown in this drawing (a) in early stages of self-timer actuation, and is shown in this drawing (b) is the thing of progress. By taking such a display format, a photographed person can get to know residual time until a shutter is cut visually.

[0020] B. Actuation of this example (self-timer)

Next, self-timer actuation of the electronic "still" camera mentioned above is explained with reference to drawing 6. Drawing 6 is a flow chart for explaining actuation of this example. First, as shown in drawing 2 at the time of self-timer use, the photography section 21 or the monitor section 22 is rotated, and the both sides of a lens 20 and LCD19 are turned to a photographed person side. And self-timer switch 9a is operated.

[0021] (a) Steps S10 and S12 stated to below initialization are processings which perform initial setting for self-timer actuation, and first, if self-timer switch 9a is operated, they will make CCD1 an OFF state in step S10. In functional configuration, as shown in drawing 3, a means for switching 31 is switched to the character generating section 30 side from the CCD1 side. Next, in step S12, timer-variables TIME is set as initial value and "10." Timer-variables TIME expresses the figure (image data) displayed on LCD19. Next, it progresses to step S14.

[0022] (b) a timer -- a time check -- steps S14-S24 stated to below & display processing are actuation/halt processing of the timer 14 which clocks the real time, and processing which updates timer-variables TIME according to the above-mentioned real time, and make a timer 14 an ON state in step S14 first. Consequently, a timer 14 clocks the real time. Next, the figure (image data) corresponding to the value of timer-variables TIME is generated in the character generating section 30, and it is made to display on LCD19 in step S16. In this case, since "10" is set to timer-variables TIME as initial value, the alphabetic character "10" shown in drawing 4 (a) is displayed on LCD.

[0023] Next, it progresses to step S18 and judges whether the elapsed time by the timer 14 carried out "1-second" progress. Here, when "1-second" progress has not been carried out, the decision result in step S18 serves as "NO", and repeats and performs this step S18. And if the elapsed time by the timer 14 reaches at "1 second", the decision result in step S18 will serve as "YES", and will progress to step S20. At step S20, it judges whether timer-variables TIME is "0." And if timer-variables TIME is not "0", the decision result in step S20 will serve as "NO", and will progress to step S22. At step S22, only "1" carries out the decrement of the timer-variables TIME, and it returns to step S16 mentioned above.

[0024] Hereafter, steps S16-S22 mentioned above are repeated and performed until timer-variables TIME is set to "0." Since "1" every decrement of the timer-variables TIME is carried out in step S22, whenever the figure displayed on LCD19 in step S16 passes for 1 second, it changes with "10", "9", "8", --, "1." Therefore, those who are photographed persons can check elapsed time by seeing the figure currently displayed on LCD19. Consequently, the stage when a shutter is cut can be known easily. And if timer-variables TIME is set to "0", the decision result in step S20 will serve as "YES", and will progress to step S24. At step S24, a timer 14 is made into an OFF state and a time check is stopped. And it progresses to step S26.

[0025] (c) Steps S26 and S28 stated to below photography & static-image record processing are photography by CCD1, and processing which records the photoed static image, first, in step S26, switch the means for switching 31 shown in drawing 3 to the CCD1 side from the character generating section 30 side, and make CCD1 an ON state. Subsequently, it progresses to step S28, a shutter is cut, and a photographed person is photoed. A photographed person's photoed image data is processed as follows.

[0026] The static image which carried out image formation through the lens is changed into an electrical signal by CCD1, and is supplied to the A/D-conversion section 3 through a buffer 2. In the A/D-conversion section 3, after the above-mentioned static-image signal is changed into digital image data, TG4 is supplied and it is outputted to a data bus. The above-mentioned image data is once memorized by DRAM9. To the image data memorized by this DRAM9, color data processing by CPU10 is performed, and a luminance signal and a chrominance signal are generated from a video signal. After this luminance signal and chrominance signal are transmitted to compression/elongation section 7 and

are compressed by the JPEG method, they are memorized by the flash memory 8.

[0027] (d) If a playback key is operated by regeneration and the key input section 9, a predetermined compression video signal (the luminance signal and chrominance signal which were compressed) is read from a flash memory 8, and it will be transmitted to compression/elongation section 7, and will be elongated. Subsequently, after the luminance signal and chrominance signal which were elongated are transmitted to SG15 and changed into a video signal, they are displayed on LCD19 through D/A converter 17 and a buffer 18. In addition, not only the time of self-timer actuation but the usual photography of the image data flow mentioned above is the same.

[0028] Thus, in this example, since it was made to display that this elapsed time can be recognized visually at least on LCD19 which is a monitor for photography images according to the elapsed time of a self-timer at the time of self-timer actuation, a photographed person can know residual time until a shutter is cut visually.

[0029] In addition, in the example mentioned above, although the image data for self-timers shall be shown in drawing 4 or drawing 5, the method stated not only to this but to the following may be adopted.

(a) You may make it pronounce elapsed time with voice in addition to the display of the image data for self-timers of a count-down format. in this case, a time check have the voice data which carried out the sampling etc. beforehand as shown in drawing 1, and according to a timer 14 -- you may make it have the voice generating section 40 which pronounces predetermined voice according to time amount If it does in this way, it can check also with voice besides a display and can recognize much more certainly.

(b) Moreover, you may make it change the foreground color of LCD19 according to elapsed time. For example, it is made to become red, when it is made to change with blue, green, yellow, and Orange and a shutter is cut according to elapsed time. If it does in this way, even if it is the case where it is separated, so that the figure as which between an electronic "still" camera and photographed persons was displayed on LCD19 cannot be read, it can recognize certainly.

[0030] (c) Moreover, you may make it blink LCD19 with the period according to elapsed time. For example, when it blinks slowly, it blinks quickly gradually in early stages of self-timer actuation according to elapsed time and a shutter is cut, it is made to be in a lighting condition. If it does in this way, even if it is the case where it is separated, so that the figure as which between an electronic "still" camera and photographed persons was displayed on LCD19 cannot be read, and the case where a photographed person cannot distinguish change of colors, such as color amblyopia and daltonism, it can recognize certainly.

[0031] (d) Moreover, you may make it change the magnitude of the image data for self-timers displayed on LCD19 according to elapsed time. For example, according to elapsed time, it enlarges gradually, and when a shutter is cut, it is made to make it display small in early stages of self-timer actuation, and display all over LCD19. If it does in this way, even if it is the case where it is separated, so that the figure as which between an electronic "still" camera and photographed persons was displayed on LCD19 cannot be read, and the case where a photographed person cannot distinguish change of colors, such as color amblyopia and daltonism, it can recognize certainly.

[0032] (e) Moreover, you may make it smear away LCD19 gradually by the predetermined foreground color according to elapsed time. For example, in early stages of self-timer actuation, when continuous tone and a shutter are gradually cut from the four directions (or four corners) of LCD17, the whole surface of LCD17 is smeared away by the predetermined foreground color. If it does in this way, even if it is the case where it is separated, so that the figure as which between an electronic "still" camera and photographed persons was displayed on LCD19 cannot be read, and the case where a photographed person cannot distinguish change of colors, such as color amblyopia and daltonism, it can recognize certainly.

(f) The means of displaying mentioned above may be combined further at least two or more. If it does in this way, also in various photography conditions, it can recognize certainly.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the configuration of the electronic "still" camera by one example of this invention.

[Drawing 2] It is the mimetic diagram showing the appearance of the electronic "still" camera at the time of self-timer use of this example.

[Drawing 3] It is the block diagram showing the functional configuration of the electronic "still" camera concerned at the time of self-timer use of this example.

[Drawing 4] It is the mimetic diagram showing an example of the image data for self-timers displayed on LCD19 of this example.

[Drawing 5] It is the mimetic diagram showing other examples of the image data for self-timers displayed on LCD19 of this example.

[Drawing 6] It is a flow chart for explaining actuation of this example.

[Description of Notations]

- 1 CCD (Photography Means)
- 2 18 Buffer
- 3 A/D Converter
- 4 TG
- 5 Drive Circuit
- 6 DRAM
- 7 Compression/Elongation Section
- 8 Flash Memory
- 9 Key Input Section
- 9a Self-timer switch (switching means)
- 10 CPU (Control Means)
- 11 ROM (Storage Means)
- 12 RAM
- 13 I/O Port
- 14 Timer (Time Check Means)
- 15 SG
- 16 VRAM
- 19 LCD (Display Means)
- 40 Voice Generating Section (Voice Generating Means)

[Translation done.]

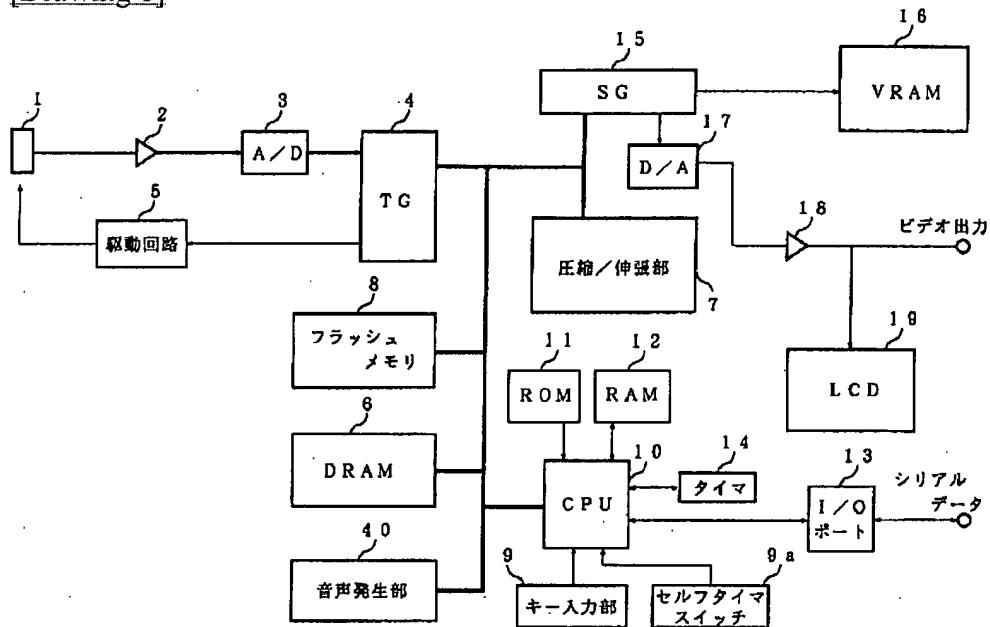
* NOTICES *

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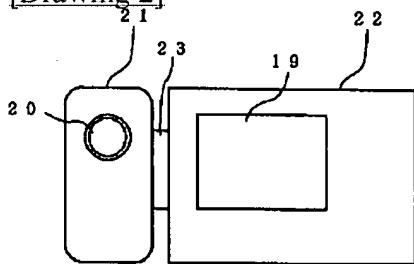
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DRAWINGS

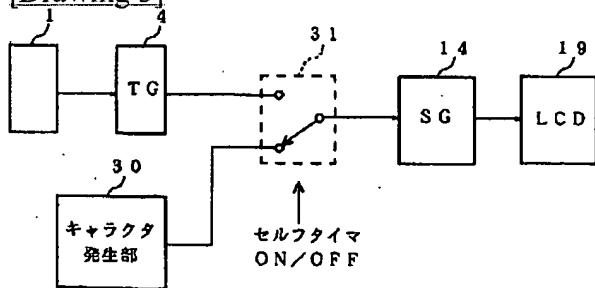
[Drawing 1]



[Drawing 2]

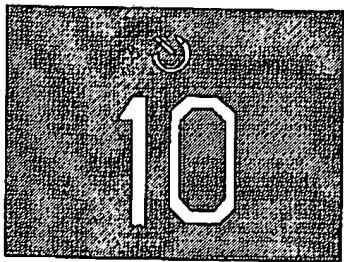


[Drawing 3]

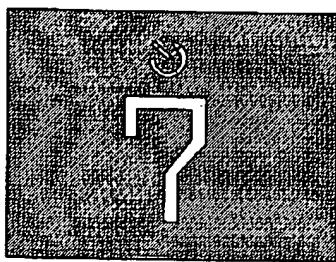


[Drawing 4]

(a)

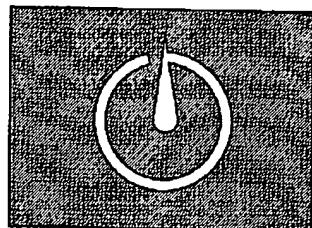


(b)

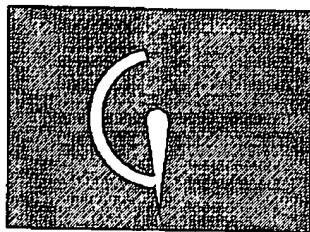


[Drawing 5]

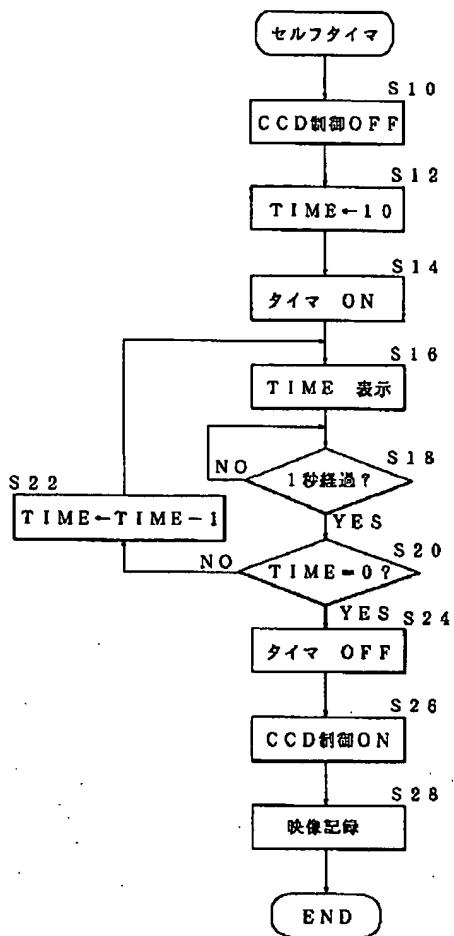
(a)



(b)



[Drawing 6]



[Translation done.]

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CORRECTION OR AMENDMENT

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F

5/781 510 K

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[Filing Date] October 14, Heisei 9

[Procedure amendment 1]

[Document to be Amended] Specification

[Item(s) to be Amended] Claim

[Method of Amendment] Modification

[Proposed Amendment]

[Claim(s)]

[Claim 1] A photography means to photo an image optically, and a display means formed in the photographed person side to display the image picturized by said image pick-up means, the time check which clocks the elapsed time at the time of self-timer actuation -- a means, this time check -- the electronic "still" camera characterized by providing the control means which displays on said display means the image according to the elapsed time clocked by the means.

[Claim 2] Said display means is an electronic "still" camera according to claim 1 characterized by having a finder function.

[Claim 3] Said display means is an electronic "still" camera according to claim 2 characterized by being prepared free movable so that the screen may be turned to a photography person side.

[Claim 4] said image -- said time check -- the electronic "still" camera according to claim 1 characterized by being the figure counted down according to the elapsed time by the means.

[Procedure amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0005

[Method of Amendment] Modification

[Proposed Amendment]

[0005]

[Means for Solving the Problem] the time check which clocks a photography means to by which the electronic "still" camera by invention according to claim 1 photos an image optically, a display means which were formed in a photographed person side display the image picturized by said image pick-up means, and the elapsed time at the time of self-timer actuation, for the above-mentioned purpose achievement -- a means and this time check -- it carries out providing the control means which displays on said display means the image according to the elapsed time clocked by the means as the description.

[Procedure amendment 3]

[Document to be Amended] Specification

[Item(s) to be Amended] 0006

[Method of Amendment] Modification

[Proposed Amendment]

[0006] Moreover, you may make it said display means equipped with a finder function like for example, claim 2 publication as a desirable mode. Moreover, you may make it said display means prepare the screen free movable like for example, claim 3 publication, so that it may be turned to a photography person side. moreover, said image -- for example, -- being according to claim 4 -- like -- said time check -- you may be the figure counted down according to the elapsed time by the means.

[Procedure amendment 4]

[Document to be Amended] Specification

[Item(s) to be Amended] 0007

[Method of Amendment] Deletion

[Procedure amendment 5]

[Document to be Amended] Specification

[Item(s) to be Amended] 0008

[Method of Amendment] Deletion

[Procedure amendment 6]

[Document to be Amended] Specification

[Item(s) to be Amended] 0009

[Method of Amendment] Modification

[Proposed Amendment]

[0009]

[Function] this invention -- the time of self-timer actuation -- a time check -- the time check by the means -- starting -- this time -- a time check -- it is made to display on a display means for the image according to the elapsed time clocked by the means to have been prepared by the control means at the photographed person side and to display the image picturized by the image pick-up means Therefore, even if it is the case of being considerably separated from the location where the noise is loud, and the installation, recognition becomes possible easily about the stage when a shutter is cut.

[Procedure amendment 7]

[Document to be Amended] Specification

[Item(s) to be Amended] 0033

[Method of Amendment] Modification

[Proposed Amendment]

[0033]

[Effect of the Invention] according to this invention -- the time of self-timer actuation -- a time check -- the time check by the means -- starting -- this time -- a time check -- since it was made to make it display on a display means for the image according to the elapsed time clocked by the means to have been prepared by the control means at the photographed person side and to display the image picturized by the image pick-up means, the following effectiveness is acquired.

- (1) Even if it is the location where the noise is loud, and a location considerably distant from the installation of an electronic "still" camera, the residual time of a self-timer can be checked easily.
- (2) For this reason, the stage when a shutter is cut can be recognized easily.

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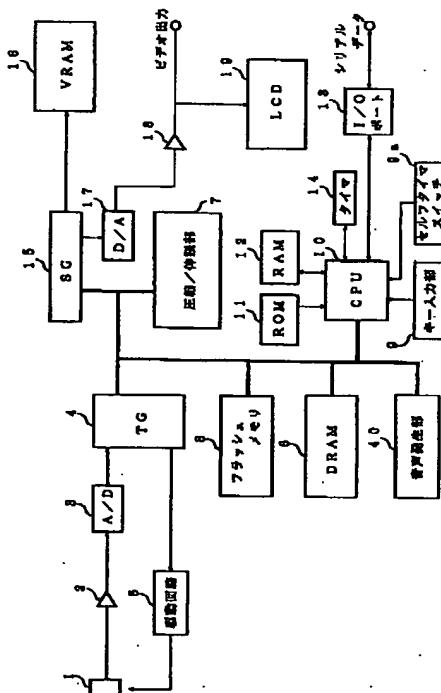
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シオ計算機株式会社東京事業所内

(54) 【発明の名前】 電子スチルカラーラ

(57)【要約】

【目的】 駆音の大きい場所や、設置場所からかなり離れている場合であってもシャッターが切られる時期を容易に確認できる電子スチルカメラを提供する。

【構成】 セルフタイマ使用時には、CCD1とLCD19との双方を被撮影者側に向ける。次に、セルフトマスイッチ9aを操作すると、CCD1の制御がオフとなり、タイマ14による実時間の計時が開始される。被撮影者側に向けられたLCD19には、セルフトマの経過時間に応じてカウントダウンする数字が表示される。したがって、被撮影者はシャッターが切られるまでの残り時間を視覚的に知ることができる。そして、タイムアップすると、CCD1の制御がオン状態となり、被撮影者の映像が撮影され、DRAM6に記憶される。その後、圧縮/伸張部7により圧縮されてフラッシュメモリ8へ格納される。また、再生が指示されると、圧縮/伸張部7により伸張した後、LCD19に表示する。



【特許請求の範囲】

【請求項1】 光学的に映像を撮影する撮影手段と、セルフタイマ動作時にはその表示面を被撮影者側に向けるよう可動自在に設けられた表示手段と、セルフタイマ動作時における経過時間を計時する計時手段と、

セルフタイマ動作時には、前記撮影手段によって撮影された映像の前記表示手段への表示を停止し、前記計時手段によって計時される経過時間を被撮影者に視認可能な画像として前記表示手段に表示させる制御手段とを具備することを特徴とする電子スチルカメラ。

【請求項2】 前記セルフタイマ動作を指示するスイッチ手段を備えることを特徴とする請求項1記載の電子スチルカメラ。

【請求項3】 前記画像は、前記計時手段による経過時間に応じてカウントダウンする数字であることを特徴とする請求項1記載の電子スチルカメラ。

【請求項4】 前記画像は、前記計時手段による経過時間に応じて、その円周が短くなる環状の帶であることを特徴とする請求項1記載の電子スチルカメラ。

【請求項5】 前記画像は、前記計時手段による経過時間に応じてその表示色が変化することを特徴とする請求項1記載の電子スチルカメラ。

【請求項6】 前記画像は、前記計時手段による経過時間に応じた周期で点滅することを特徴とする請求項1記載の電子スチルカメラ。

【請求項7】 前記画像は、前記計時手段による経過時間に応じてその大きさが変化することを特徴とする請求項1記載の電子スチルカメラ。

【請求項8】 前記画像は、前記計時手段による経過時間に応じて前記表示手段の表示域に徐々に広がっていくことを特徴とする請求項1記載の電子スチルカメラ。

【請求項9】 前記画像に加え、前記計時手段による経過時間を音声により発音する音声発生手段を具備することを特徴とする請求項1記載の電子スチルカメラ。

【請求項10】 請求項3乃至9に記載した表示方式のうち、少なくとも何れか2つ以上を組み合わせたことを特徴とする請求項1記載の電子スチルカメラ。

【請求項11】 前記画像が記憶された記憶手段を備えることを特徴とする請求項1乃至10の何れかに記載の電子スチルカメラ。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、静止画像を記録媒体に記録する電子スチルカメラに関する。

【0002】

【従来の技術】従来より、レンズで捉えた光学的な静止画像をCCD (Charge Coupled Device;電荷結合素子)により電気信号に変換し、半導体メモリや、フロッピーディスク等の記録媒体に記憶する電子スチルカメラが知

られている。この電子スチルカメラでは、静止画像を電気的な情報として記録しているので、そのままテレビ受像機で再生したり、電話回線を利用して遠隔地に転送したり、種々の画像処理を施すことができるという特徴を備えている。

【0003】

【発明が解決しようとする課題】ところで、従来の電子スチルカメラでは、セルフタイマを用いて撮影する場合、シャッターが切られる時期を電子音等のインターバルを短くすることにより被撮影者に認識させるようにしていたので、以下の問題があった。

(イ) 駆音の大きい場所や、被撮影者が電子スチルカメラの設置場所からかなり離れている場合には、セルフタイマの残り時間がどれほど有るか分からぬという問題があった。

(ロ) このため、シャッターの切られる時期が分かりにくいという問題があった。

【0004】そこで本発明は、駆音の大きい場所や、設置場所からかなり離れている場合であってもシャッターが切られる時期を容易に確認できる電子スチルカメラを提供することを目的とする。

【0005】

【課題を解決するための手段】上記目的達成のため、請求項1記載の発明による電子スチルカメラは、光学的に映像を撮影する撮影手段と、セルフタイマ動作時にはその表示面を被撮影者側に向けるよう可動自在に設けられた表示手段と、セルフタイマ動作時における経過時間を計時する計時手段と、セルフタイマ動作時には、前記撮影手段によって撮影された映像の前記表示手段への表示を停止し、前記計時手段によって計時される経過時間を被撮影者に視認可能な画像として前記表示手段に表示させる前記表示手段に表示させる制御手段とを具備することを特徴とする。

【0006】また、好ましい態様として、例えば請求項2記載のように、前記セルフタイマ動作を指示するスイッチ手段を備えるようにしてもよい。また、前記画像は、例えば請求項3記載のように、前記計時手段による経過時間に応じてカウントダウンする数字であってもよい。また、前記画像は、例えば請求項4記載のように、前記計時手段による経過時間に応じて、その円周が短くなる環状の帶であってもよい。

【0007】また、前記画像は、例えば請求項5記載のように、前記計時手段による経過時間に応じてその表示色が変化するようにしてもよい。また、前記画像は、例えば請求項6記載のように、前記計時手段による経過時間に応じてその大きさが変化するようにしてもよい。また、前記画像は、例えば請求項7記載のように、前記計時手段による経過時間に応じてその大きさが変化するようにしてもよい。また、前記画像は、例えば請求項8記載のように、前記計時手段による経過時間に応じて前記表示手

段の表示域に徐々に広がっていくようにしてもよい。
【0008】また、好ましい態様として、例えば請求項9記載のように、前記画像に加え、前記計時手段による経過時間を音声により発音する音声発生手段を具備するようにしてもよい。また、前記画像は、例えば請求項10記載のように、請求項3ないし9に記載した表示方式を組み合わせるようにもよい。また、好ましい態様として、例えば請求項11記載のように、前記画像が記憶された記憶手段を備えるようにしてもよい。

【0009】

【作用】本発明では、セルフタイマ動作時には、計時手段による計時を開始し、このとき、計時手段によって計時される経過時間を被撮影者に視認可能な画像として、制御手段によって、被撮影者側に表示面が向けられた表示手段に表示させる。したがって、騒音の大きい場所や、設置場所からかなり離れている場合であってもシャッターが切られる時期を容易に認識可能となる。

【0010】

【実施例】以下、図面を参照して本発明の実施例について説明する。

A. 本実施例の構成

A-1. ブロック図

図1は本発明の一実施例における電子スチルカメラの構成を示すブロック図である。図において、1はCCDであり、図示しないレンズを介して結像した静止映像を電気信号に変換し、バッファ2へ供給する。バッファ2は、上記静止映像信号を所定レベルに増幅した後、A/D変換部3へ供給する。A/D変換部3は、上記静止映像信号をデジタルデータ（以下、映像信号という）に変換した後、TG（Timing Generator;タイミング発生器）4へ供給する。TG4は、CCD1を駆動する駆動回路4を制御するためのタイミング信号を生成し、これを駆動回路5へ供給するとともに、このタイミング信号に従って、上記映像信号を取り込み、データバスへ出力する。

【0011】次に、6はDRAM（ダイナミックメモリ）であり、上記TG4が出力する映像信号を一時記憶する記憶媒体である。この映像信号は、1画面分の撮影が終了した時点で読み出され、輝度信号と色信号とを分離する色演算処理が施される。また、7は、色演算処理により分離された上記輝度信号と色信号とを、例えばJPPEG（Joint Photographic Coding Experts Group）方式などの圧縮方式により圧縮する一方、圧縮された圧縮映像信号を伸張する処理を施す圧縮／伸張部である。8は上記圧縮された映像信号（輝度信号と色信号）を格納するフラッシュメモリである。9はキー入力部であり、当該電子スチルカメラの動作モード（映像取り込みキー、再生キー）や、各種設定値を設定するスイッチ等から構成される。9aは、セルフタイマ機能を動作させるためのセルフタイマスイッチである。キー入力部9お

よびセルフタイマスイッチ9aの状態は、CPU（中央処理装置）10に取り込まれるようになっている。

【0012】CPU10は、ROM11内のプログラム、および上記キー入力部8のスイッチの状態に従って各部の動作を制御する。12はRAM（ランダムアクセスメモリ）であり、上記CPU10のワーキングエリアとして用いられる。また、13は、シリアル信号に変換された映像信号等を入出力するインターフェースとして機能するI/Oポートである。14はCPU10の指示によって実時間を計時するタイマである。次に、15はSG（Signal Generator；ビデオ信号発生器）であり、圧縮／伸張部7により伸張された輝度信号に色信号を重複し、同期信号等を付加して、デジタルビデオ信号を作成し、VRAM（ビデオRAM）16およびD/A変換器17へ出力する。

【0013】VRAM16は、上記デジタルビデオ信号を記憶する記憶媒体である。また、D/A変換器17は、上記SG15が出力するデジタルビデオ信号をアナログ信号（以下、アナログビデオ信号という）に変換し、バッファ18を介して、出力端から出力するとともに、LCD（液晶表示器）19へ供給する。LCD19はバッファ18を介して供給されるアナログビデオ信号に従って、画像を表示する。

【0014】A-2. 外観図

次に、本実施例の電子スチルカメラの外観について図2を参照して説明する。図2はセルフタイマ使用時における電子スチルカメラの外観を示す模式図である。図において、電子スチルカメラは、レンズ20が設けられた撮影部21と上述したLCD19が設けられたモニタ部22とから構成されており、撮影部21とモニタ部22とは軸中心に回転自在な連結軸23によって連結されている。通常の使用においては、レンズ20が被撮影者側、LCD19が撮影者側に向くよう撮影部21、もしくはモニタ部22を回転させる。一方、セルフタイマ使用時には、レンズ20とLCD19との双方が被撮影者側に向くように、撮影部21、もしくはモニタ部22を回転させて図示の状態とする。図示の状態にあっては、被撮影者側からLCD19の表示が見れるようになっている。LCD19に数インチのサイズのものを用いれば、40被撮影者がかなり離れていても表示は容易に確認できる。

【0015】A-3. セルフタイマ動作時の概略構成

次に、セルフタイマ使用時における当該電子スチルカメラの機能構成について図3を参照して説明する。図3はセルフタイマ使用時における当該電子スチルカメラの略機能構成を示すブロック図である。なお、図において、図1に対応する部分には同一の符号を付けてその説明を省略する。図3において、30はセルフタイマ動作時にシャッターが切られる時期を被撮影者に知らせるべく、50LCD19に表示させるためのセルフタイマ用画像デー

タが格納されているキャラクタ発生部である。なお、セルフタイマ用画像データの具体例については後述する。

【0016】上記セルフタイマ用画像データは、セルフタイマ動作時に、動作開始からシャッターが切られるまでの時間を計時するセルフタイマの経過時間に応じて、その経過時間を映像として表すものである。上記キャラクタ発生部30は、セルフタイマの経過時間に応じたセルフタイマ用画像データを格納する記憶媒体と、セルフタイマによる経過時間に同期させて上記セルフタイマ用画像データを出力する出力手段とから構成されている。本実施例では、セルフタイマ用画像データが格納される記憶媒体は図1に示すROM11により実現され、上記出力手段はCPU10による処理(ソフトウェア)により実現されているが、専用のハードウェアを備えるようにしてもよい。

【0017】次に、31は、前述したTG4が出力する画像データと、上記キャラクタ発生部30が出力するセルフタイマ用画像データとのいずれか一方をLCD19へ供給するための切換手段である。この切換手段31は、通常動作のとき、言い換えるとセルフタイマ動作時以外には、TG4が出力する画像データをLCD19へ供給し、セルフタイマ動作時には、キャラクタ発生部30が出力するセルフタイマ用画像データをLCD19へ供給するようになっている。本実施例では、切換手段31はCPU10による処理(ソフトウェア)により実現されているが、専用のハードウェアを備えるようにしてもよい。

【0018】A-4. セルフタイマ用画像データの第1表示例

次に、上述したセルフタイマ用画像データについて図4を参照して説明する。図4(a)、(b)はLCD19に表示されるセルフタイマ用画像データの一例を示す模式図である。図4(a)、(b)に示すセルフタイマ用画像データは、セルフタイマによる経過時間を1カウントずつ減じるカウントダウン形式の画像データであり、カウント値を数字によって表す。図において、数字は白抜きで、LCD19の中央部に表示されるようになっており、背景(斜線部)は黒べたとなっている。また、数字上部のマークは、セルフタイマの使用を表すものである。同図(a)に示すセルフタイマ用画像データは、セルフタイマ動作初期におけるものであり、同図(b)に示すセルフタイマ用画像データは、少し経過した後のものである。このような表示形式をとることにより、被撮影者は、シャッターが切られるまでの残り時間を視覚的に知ることが可能である。

【0019】A-5. セルフタイマ用画像データの第2表示例

次に、上述したセルフタイマ用画像データの第2の表示例について図5を参照して説明する。図5(a)、(b)はLCD19に表示されるセルフタイマ用画像データ

ータの他の例を示す模式図である。図5(a)、(b)に示すセルフタイマ用画像データは、セルフタイマによる経過時間を、環状の白い帯の長さにより指示する画像データであり、経過時間に応じて環状の白い帯の長さが短くなる。同図(a)に示すセルフタイマ用画像データはセルフタイマ動作初期におけるものであり、同図(b)に示すセルフタイマ用画像データは途中経過のものである。このような表示形式をとることにより、被撮影者はシャッターが切られるまでの残り時間を視覚的に知ることが可能である。

【0020】B. 本実施例の動作(セルフタイマ)

次に、上述した電子スチルカメラのセルフタイマ動作について図6を参照して説明する。図6は本実施例の動作を説明するためのフローチャートである。まず、セルフタイマ使用時には、図2に示すように、撮影部21、もしくはモニタ部22を回転させて、レンズ20とLCD19との双方を被撮影者側に向ける。そして、セルフタイマスイッチ9aを操作する。

【0021】(a) 初期設定

以下に述べるステップS10、S12は、セルフタイマ動作のための初期設定を行う処理であり、まず、セルフタイマスイッチ9aが操作されると、ステップS10において、CCD1をオフ状態とする。機能構成的には、図3に示すように、切換手段31をCCD1側からキャラクタ発生部30側に切り換える。次に、ステップS12において、タイマ変数TIMEを初期値、「10」に設定する。タイマ変数TIMEは、LCD19に表示される数字(画像データ)を表す。次にステップS14へ進む。

【0022】(b) タイマ計時&表示処理

以下に述べるステップS14～S24は、実時間を計時するタイマ14の動作/停止処理と、上記実時間に応じてタイマ変数TIMEを更新する処理であり、まず、ステップS14において、タイマ14をオン状態とする。この結果、タイマ14が実時間を計時する。次に、ステップS16において、タイマ変数TIMEの値に対応する数字(画像データ)をキャラクタ発生部30で発生し、LCD19に表示させる。この場合、タイマ変数TIMEには、初期値として「10」が設定されているので、LCDには、図4(a)に示す「10」という文字が表示される。

【0023】次に、ステップS18へ進み、タイマ14による経過時間が「1秒」経過したか否かを判断する。ここで、「1秒」経過していない場合には、ステップS18における判断結果は「NO」となり、同ステップS18を繰り返し実行する。そして、タイマ14による経過時間が「1秒」に達すると、ステップS20における判断結果が「YES」となり、ステップS20へ進む。

ステップS20では、タイマ変数TIMEが「0」であるか否かを判断する。そして、タイマ変数TIMEが

「0」でなければ、ステップS20における判断結果は「NO」となり、ステップS22へ進む。ステップS22では、タイマ変数TIMEを「1」だけデクリメントし、上述したステップS16へ戻る。

【0024】以下、タイマ変数TIMEが「0」になるまで、上述したステップS16～S22を繰り返し実行する。タイマ変数TIMEは、ステップS22において「1」ずつデクリメントされるため、ステップS16においてLCD19に表示される数字は、1秒経過する毎に、「10」、「9」、「8」、「…」、「1」と変化する。したがって、被撮影者である人は、LCD19に表示されている数字を見ることにより、経過時間を確認できる。この結果、シャッターが切られる時期を容易に知ることができる。そして、タイマ変数TIMEが「0」となると、ステップS20における判断結果が「YES」となり、ステップS24へ進む。ステップS24では、タイマ14をオフ状態とし、計時を停止させる。そして、ステップS26へ進む。

【0025】(c)撮影&静止画像記録処理

以下に述べるステップS26、S28は、CCD1による撮影と、撮影した静止画像を記録する処理であり、まず、ステップS26において、図3に示す切換手段31をキャラクタ発生部30側からCCD1側に切り替え、CCD1をオン状態とする。次いで、ステップS28へ進み、シャッターを切り、被撮影者を撮影する。撮影された被撮影者の画像データは以下のように処理される。

【0026】レンズを介して結像した静止画像は、CCD1により電気信号に変換され、バッファ2を介して、A/D変換部3へ供給される。A/D変換部3では、上記静止画像信号がデジタルの画像データに変換された後、TG4へ供給され、データバスへ出力される。上記画像データは、一旦、DRAM9に記憶される。このDRAM9に記憶された画像データに対して、CPU10による色演算処理が行われ、映像信号から輝度信号と色信号が生成される。この輝度信号と色信号とは、圧縮/伸張部7に転送され、JPEG方式により圧縮された後、フラッシュメモリ8に記憶される。

【0027】(d)再生処理

そして、キー入力部9により再生キーが操作されると、フラッシュメモリ8から所定の圧縮映像信号(圧縮された輝度信号と色信号)が読み出され、圧縮/伸張部7に転送されて伸張される。次いで、伸張された輝度信号と色信号とは、SG15に転送されて、ビデオ信号に変換された後、D/A変換器17、バッファ18を介してLCD19に表示される。なお、上述した画像データの流れは、セルフタイマ動作時に限らず、通常の撮影でも同じである。

【0028】このように、本実施例では、セルフタイマ動作時には、撮影映像用のモニタであるLCD19に、セルフタイマの経過時間に応じて、該経過時間を少なく

とも視覚で認識できるように表示するようにしたので、被撮影者はシャッターが切られるまでの残り時間を視覚的に知ることができる。

【0029】なお、上述した実施例では、セルフタイマ用画像データを図4もしくは図5に示すものとしたが、これに限らず、以下に述べる方式を採用してもよい。

(a)カウントダウン形式のセルフタイマ用画像データの表示に加え、経過時間を音声により発音するようにしてもよい。この場合、図1に示すように、予めサンプリング等しておいた音声データを有し、タイマ14による計時時間に応じて、所定の音声を発音する音声発生部40を備えるようにしてもよい。このようにすると、表示の他に音声によっても確認することができ、より一層確実に認識することができる。

(b)また、LCD19の表示色を経過時間に応じて変化させるようにしてもよい。例えば、経過時間に応じて、青、緑、黄色、オレンジと変化させ、シャッターが切られる時には、赤となるようにする。このようにすると、電子スチルカメラと被撮影者との間が、LCD19に表示された数字が読み取れないほど離れている場合であっても、確実に認識することができる。

【0030】(c)また、LCD19を経過時間に応じた周期で点滅させるようにしてもよい。例えば、セルフタイマ動作初期には、ゆっくりと点滅し、経過時間に応じて徐々に速く点滅して、シャッターが切られる時には、点灯状態となるようにする。このようにすると、電子スチルカメラと被撮影者との間が、LCD19に表示された数字が読み取れないほど離れている場合や、被撮影者が色弱、色盲等、色の変化を判別できない場合であっても、確実に認識することができる。

【0031】(d)また、LCD19に表示されるセルフタイマ用画像データの大きさを経過時間に応じて変化させるようにしてもよい。例えば、セルフタイマ動作初期には小さく表示させ、経過時間に応じて徐々に大きくし、シャッターが切られる時にはLCD19全面に表示させるようにする。このようにすると、電子スチルカメラと被撮影者との間が、LCD19に表示された数字が読み取れないほど離れている場合や、被撮影者が色弱、色盲等、色の変化を判別できない場合であっても、確実に認識することができる。

【0032】(e)また、LCD19を経過時間に応じて所定の表示色で徐々に塗りつぶすようにしてもよい。例えば、セルフタイマ動作初期には、LCD17の上下左右(あるいは四隅)から徐々に塗りつぶし、シャッターが切られる時には、LCD17の全面を所定の表示色で塗りつぶすようにする。このようにすると、電子スチルカメラと被撮影者との間が、LCD19に表示された数字が読み取れないほど離れている場合や、被撮影者が色弱、色盲等、色の変化を判別できない場合であっても、確実に認識することができる。

(f)さらに、上述した表示方式を少なくとも2以上組み合わせてもよい。このようにすると、さまざまな撮影条件においても、確実に認識することができる。

【0033】

【発明の効果】本発明によれば、セルフタイマ動作時には、計時手段による計時を開始し、このとき、計時手段によって計時される経過時間を被撮影者に視認可能な画像として、制御手段によって、被撮影者側に表示面が向けられた表示手段に表示させるようにしたので、以下の効果が得られる。

(1)騒音の大きい場所や、電子スチルカメラの設置場所からかなり離れている場合であっても、セルフタイマの残り時間を容易に確認できる。

(2)このため、シャッターが切られる時期を容易に認識できる。

【図面の簡単な説明】

【図1】本発明の一実施例による電子スチルカメラの構成を示すブロック図である。

【図2】本実施例のセルフタイマ使用時における電子スチルカメラの外観を示す模式図である。

【図3】本実施例のセルフタイマ使用時における当該電子スチルカメラの機能構成を示すブロック図である。

【図4】本実施例のLCD19に表示されるセルフタイマ用画像データの一例を示す模式図である。

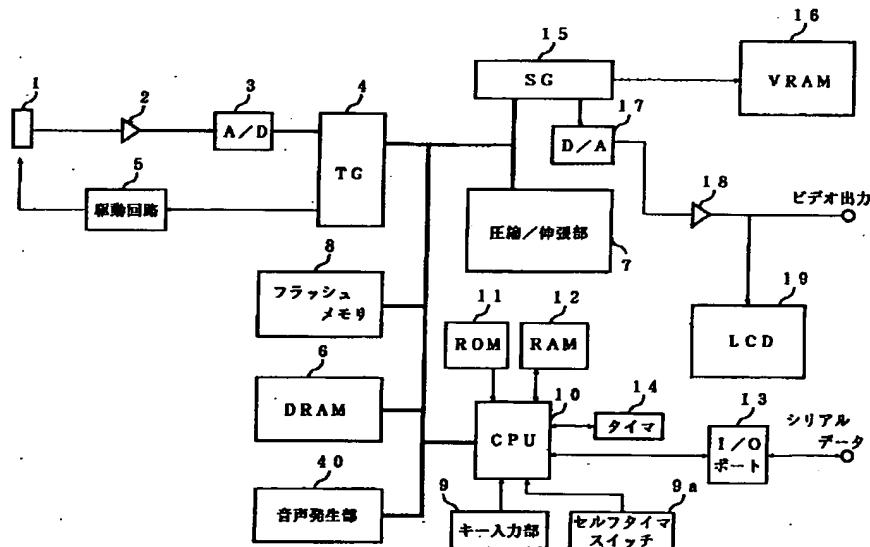
【図5】本実施例のLCD19に表示されるセルフタイマ用画像データの他の例を示す模式図である。

【図6】本実施例の動作を説明するためのフローチャートである。

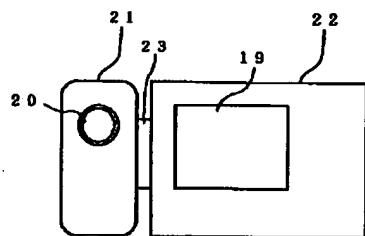
【符号の説明】

1	CCD (撮影手段)
2, 18	バッファ
3	A/D変換器
4	TG
5	駆動回路
6	DRAM
7	圧縮/伸張部
8	フラッシュメモリ
9	キー入力部
9a	セルフタイマスイッチ (スイッチ手段)
10	CPU (制御手段)
11	ROM (記憶手段)
12	RAM
13	I/Oポート
20	14 タイマ (計時手段)
15	SG
16	VRAM
17	D/A
18	ビデオ出力
19	LCD (表示手段)
40	音声発生部 (音声発生手段)

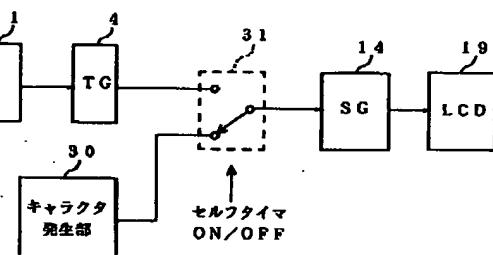
【図1】



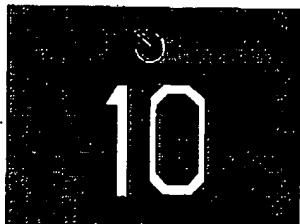
【図2】



【図3】

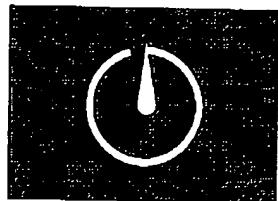


【図4】

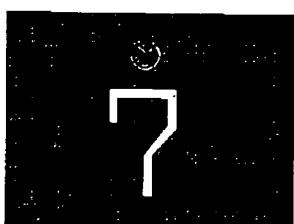


(a)

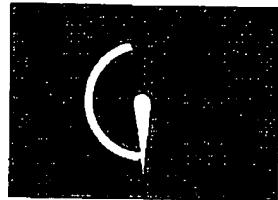
(a)



(b)

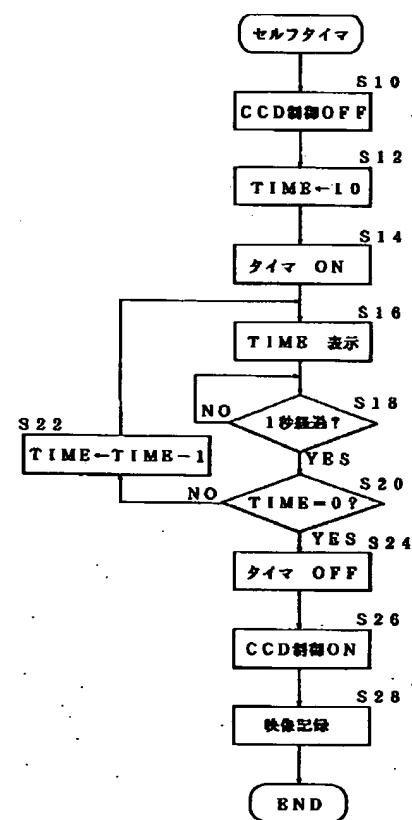


(b)



【図5】

【図6】



フロントページの続き

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